

Notice of Allowability

Application No.

10/553,610

Examiner

Erica E. Cadugan

Applicant(s)

BAUER ET AL.

Art Unit

3722

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to docket no. 71940 filed 10/18/05 and interview of 3/28/07.
2. ☒ The allowed claim(s) is/are 1-16.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 10/18/05 | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Brian Duncan on March 28, 2007.

The application has been amended as follows:

The abstract has been amended as follows:

ABSTRACT:

A machine tool is provided, in particular for the synchronous machining of workpieces. The tool includes two or more spindle units (2, 3), which run parallel in a machining unit and are designed to hold [workpieces] tools and repositioning devices for the precise adjustment of the position of the spindle units (2, 3) in relation to one another, preferably in all three directions x, y and z of the orthogonal co-ordinate system in the machining unit (4). The repositioning devices for displacing at least one of the spindle units (2, 3), at least in an x and/or y direction, include an eccentric bush (5, 6), which can be rotated about a central shaft (B1, B2) and locked and in which the spindle units (2, 3) are mounted eccentrically, parallel to the central shaft (B1, B2).

In the clean copy of the substitute specification, between paragraphs 0019 and 0020, the following paragraph has been added:

FIG. 4 is a perspective view of a spindle unit 3 with the actuator block 9 and the valve block 4.

The claims have been amended as follows:

Claim 1 (Currently Amended). A machine tool for the synchronous machining of workpieces, said tool being comprised of:

at least two [or more] spindle units, which run parallel in a machining unit for reception of tools; and

repositioning devices for precise adjustment of the position of the spindle units in relation to one another[, preferably] in all three directions x, y, and z of the orthogonal co-ordinate system in the machining unit, wherein the repositioning devices for displacing at least one of the spindle units in at least one of the directions x and/or y each comprise an eccentric bush, which can be rotated about a central [shaft] axis of the respective bush and locked and in which the rotary tool axes of each of the spindle units are mounted eccentrically relative to the central axis of the respective bush, parallel to said central [shaft] axes; and wherein each eccentric bush is rotated by a linear movement of a respective piston.

Claim 2 (Currently Amended). A machine tool according to claim 1, wherein said repositioning devices can be activated independently of each other and the repositioning in [each machining plane] at least one of the directions x and/or y is executed by rotating said eccentric bushes and is superposed in one of the at least two spindle units by a movement of the one spindle unit in the z-direction.

3 (Currently Amended). A machine tool according to claim 1, wherein actuation of the repositioning devices [attack] for the x and/or y directions occurs tangentially at the outer rim of said eccentric bushes.

4 (Currently Amended). A machine tool according to claim 1, wherein the repositioning devices are driven one or more of mechanically[, electrically,] and hydraulically.

Claim 5 (Currently Amended). A machine tool according to claim 1, wherein the repositioning devices for the x and/or y directions [are comprised of] include retainer bolts disposed parallel to the respective spindle axis and are also comprised of groove blocks [attacking] connected to said retainer bolts and being actuated by repositioning cylinders.

Claim 6 (Currently Amended). A machine tool according to claim [1] 5, further comprising a measuring system for recording [the] a repositioning [path] distance moved by [of] the groove blocks [disposed at] actuated by said repositioning cylinders.

Claim 7 (Currently Amended). A machine tool according to claim 1, wherein [the] a repositioning [path] distance of the spindle units in said [x, y direction] x and y directions lies in a range from 0.1 to 0.5 mm and in a range from 0.8 to 5 mm in [a] said z-direction.

Claim 8 (Original). A machine tool according to claim 1, wherein the repositioning can be controlled and regulated with an accuracy of $<1\ \mu\text{m}$.

Claim 9 (Currently Amended). A machine tool for machining of workpieces, the machine tool comprising:

a machining unit;

a first spindle unit [having] adapted for reception of tools;

a second spindle unit adapted for reception of tools;

a first repositioning device for adjustment of a position of said first spindle unit in relation to said second spindle unit in [three] two directions x[, and y[, and z] of the orthogonal co-ordinate system of said machining unit, said first repositioning device comprising a first eccentric bush connected to said machining unit and rotatable about a first central bush axis [shaft] and lockable in a position, said first spindle unit being mounted eccentrically in said first eccentric bush with respect to the first central bush axis with a first spindle [shaft] rotation axis parallel to said first central bush axis [shaft]; [and]

a second repositioning device for adjustment of a position of said second spindle unit in relation to said first spindle unit in [three] the directions x[, and y[, and z] of the orthogonal co-ordinate system of said machining unit, said second repositioning device comprising a second eccentric bush connected to said machining unit and rotatable about a second central [shaft] bush axis and lockable in a position, said second spindle unit being mounted eccentrically in said second eccentric bush with respect to the second central bush axis with a second spindle [shaft] rotation axis parallel to said second central bush axis [shaft]; and

wherein each of the first and second eccentric bushes is rotated by a linear movement of a respective piston.

Claim 10 (Currently Amended). A machine tool according to claim 9, wherein said each repositioning device is activatable independently of the other and the repositioning in each [machining plane] of the x and y directions is executed by rotating said eccentric bushes and is superposed in one of the two spindle units by a movement of the one spindle unit in the z-direction.

Art Unit: 3722

Claim 11 (Currently Amended). A machine tool according to claim 9, wherein actuation of the repositioning devices [attack] occurs tangentially at the outer rim of said eccentric bushes.

Claim 12 (Currently Amended). A machine tool according to claim 9, further comprising a repositioning device drive that is one of a mechanical drive[, an electrical drive] and a hydraulic drive.

Claim 13 (Currently Amended). A machine tool according to claim 9, wherein the repositioning devices each include retainer bolts disposed parallel to a respective spindle axis and are also comprised of groove blocks acting on said retainer bolts and being actuated by repositioning cylinders.

Claim 14 (Currently Amended). A machine tool according to claim [9] 13, further comprising a measuring system for recording a repositioning [path] distance moved by [of] the groove blocks [disposed at] actuated by said repositioning cylinders.

Claim 15 (Currently Amended). A machine tool according to claim 9, wherein [each repositioning device defines] a repositioning [path] distance of at least one of the spindle units in [another] said x[,] and/or y direction [that] lies in a range from 0.1 to 0.5 mm and in a range from 0.8 to 5 mm in said z-direction.

Claim 16 (Original). A machine tool according to claim 9, wherein each repositioning device provides positional accuracy of $<1 \mu\text{m}$.

2. The following is an examiner's statement of reasons for allowance:

EP 811448 (cited by applicant) is considered to be a representative example of the closest prior art of record to the present invention as set forth in independent claims 1 and 9.

For example, note the presence of two or more parallel “spindle units” including spindles 2 for rotating tools 3 in a machining unit 4 (Figure 1). The spindle units 2 are moved in the shown x and y directions (Figure 4) by rotation of an eccentric ring or “bush” 9 in which the spindle units are mounted (see abstract, Figures 6-9). Examiner obtained a machine translation of the French text (cited on the attached PTO Form 892), which states (last line of the disclosure) that “[O]f course, each pin of the machining of the multiple head case of figure 1 can comprise an adjusting device in conformity with the invention”, i.e., each of the spindle units 2 shown in Figure 1 can be provided with an adjusting device including an eccentric bush 9.

Examiner notes that there are several other documents available which also teach the use of at least two parallel tool spindles that are moved relative to one another via the use of rotary eccentric bushings in which the spindles are mounted, and in at least some of these references, the eccentric bushings are rotationally actuated tangentially at the outer rim thereof (usually by a gearing arrangement).

See, for example, DE 34868 (cited by applicant), US Pat. No. 3,203,282 to Wilson (cited by Applicant), JP 6-238503, JP 58-181503, JP-4-122505, JP-7-204916, or JP-56-045309, for example.

However, none of these references teach that “each eccentric bush is rotated by a linear movement of a respective piston” as set forth in independent claim 1, nor the similar limitation from independent claim 9 “wherein each of the first and second eccentric bushes is rotated by a linear movement of a respective piston”.

Also, there is no combinable teaching in the prior art of record that would reasonably and absent impermissible hindsight motivate one having ordinary skill in the art to so modify the

Art Unit: 3722

teachings of any of the aforescribed references, and thus, for at least the foregoing reasoning, the prior art of record does not render obvious the present invention as set forth in independent claims 1 and 9.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Information Disclosure Statement

3. It is noted that the last reference cited on the information disclosure statement (IDS) filed 10/18/2005 was lined through because that reference was already cited (as the second reference listed on the same IDS).

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

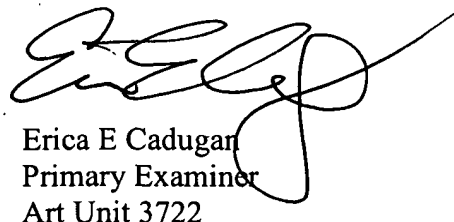
5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erica E. Cadugan whose telephone number is (571) 272-4474.

The examiner can normally be reached on M-F, 6:30 a.m. to 4:00 p.m., alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Monica S. Carter can be reached on (571) 272-4475. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3722

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Erica E Cadogan
Primary Examiner
Art Unit 3722

eec
March 28, 2007